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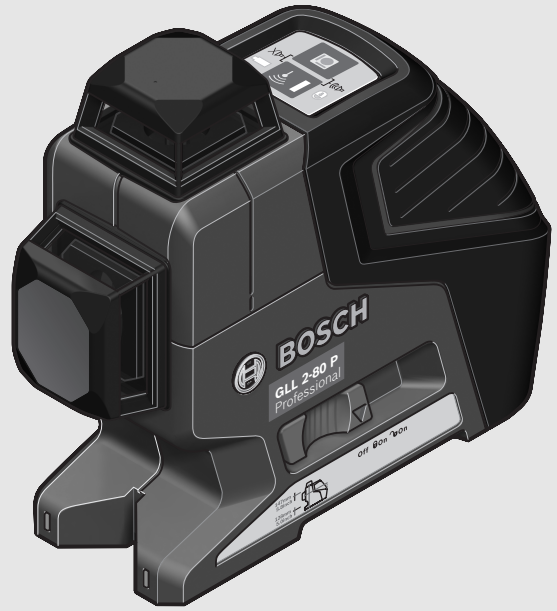

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1 609 929 S04 (2009.06) T / 303 **XXX**

GLL 2-80 P Professional

BOSCH

de Originalbetriebsanleitung
en Original instructions
fr Notice originale
es Manual original
pt Manual original
it Istruzioni originali
nl Oorspronkelijke gebruiksaanwijzing
da Original brugsanvisning
sv Bruksanvisning i original
no Original driftsinstruks
fi Alkuperäiset ohjeet
el Πρωτότυπο οδηγιών χρήσης
tr Orijinal işletme talimatı
pl Instrukcja oryginalna
cs Původní návod k používání
sk Pôvodný návod na použitie
hu Eredeti használati utasítás
ru Оригинальное руководство по эксплуатации
uk Оригінальна інструкція з експлуатації
ro Instrucţiuni originale
bg Оригинална инструкция
sr Originalno uputstvo za rad
sl Izvirna navodila
hr Originalne upute za rad
et Algupärane kasutusjuhend
lv Instrukcijas oriģinālvalodā
lt Originali instrukcija
cn 正本使用说明书
tw 正本使用說明書
ko 사용 설명서 원본
th หนังสือคู่มือการใช้งานฉบับต้นแบบ
id Petunjuk-Petunjuk untuk Penggunaan Orisinal
vi Bảng hướng dẫn nguyên bản
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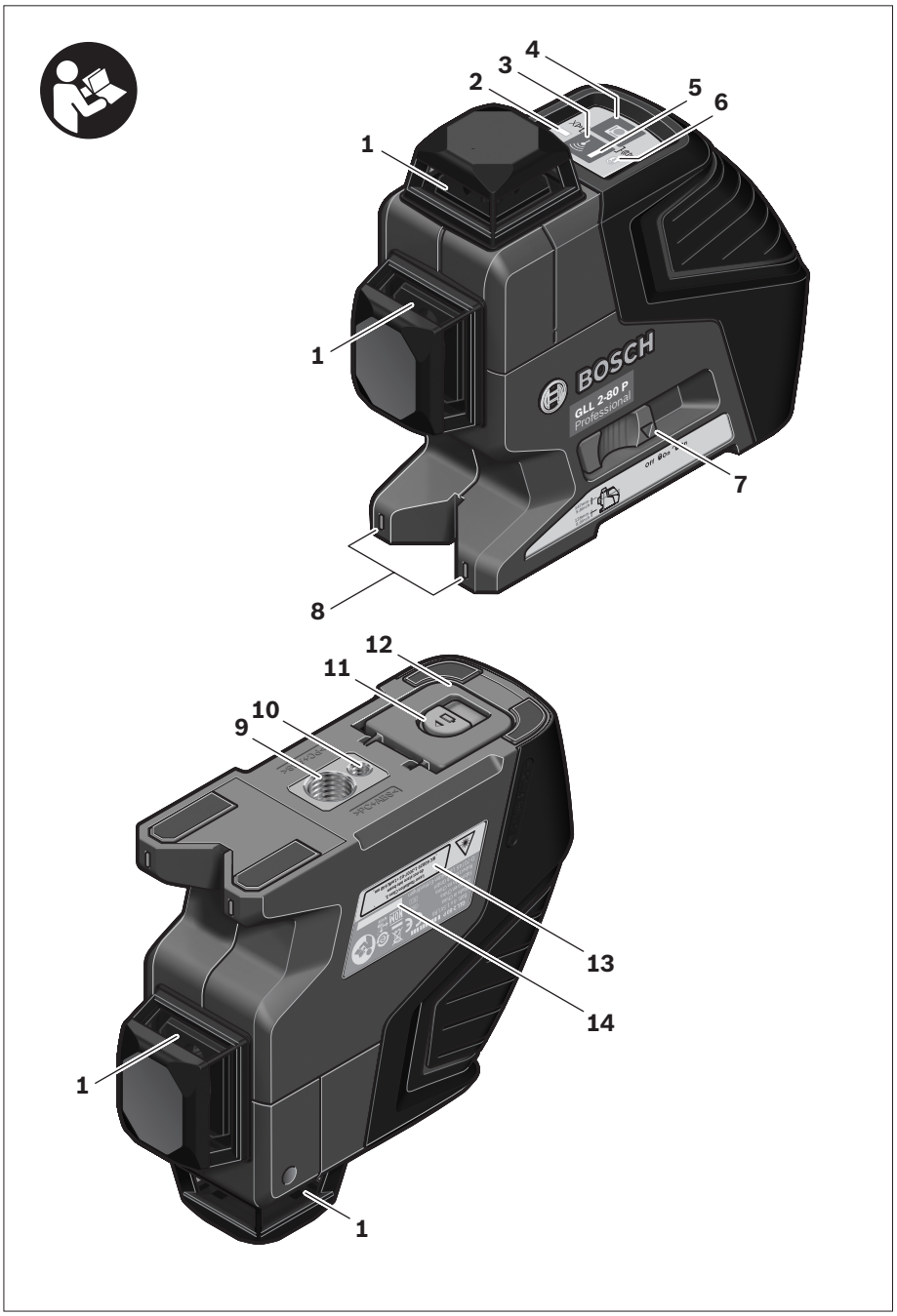
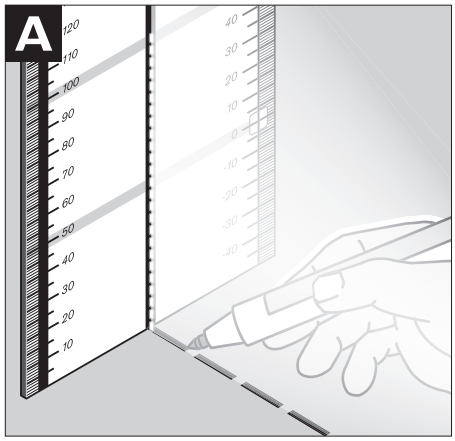
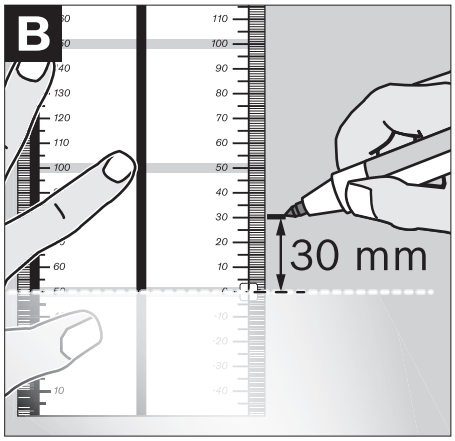
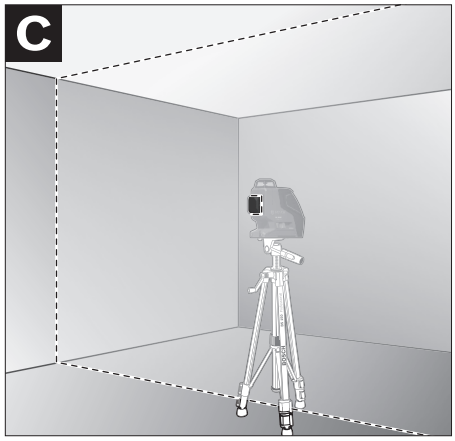
OBJ_BUCH-907-001.book Page 3 Tuesday, June 30, 2009 2:32 PM

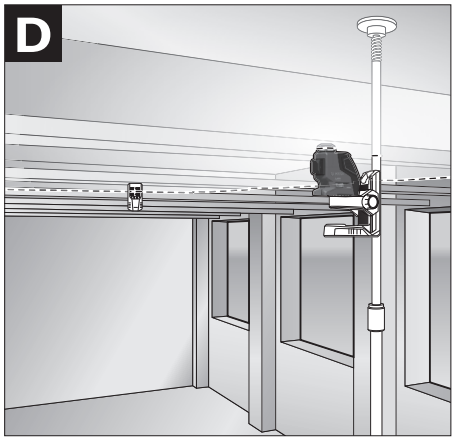


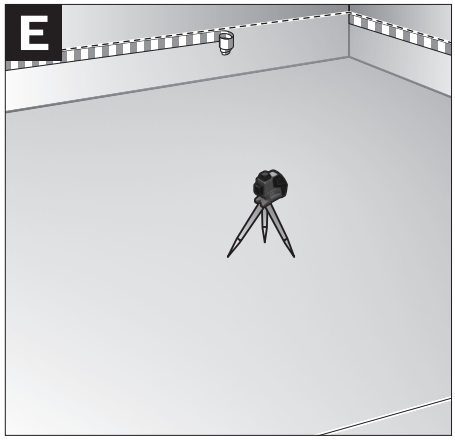
OBJ_BUCH-907-001.book Page 4 Tuesday, June 30, 2009 2:32 PM

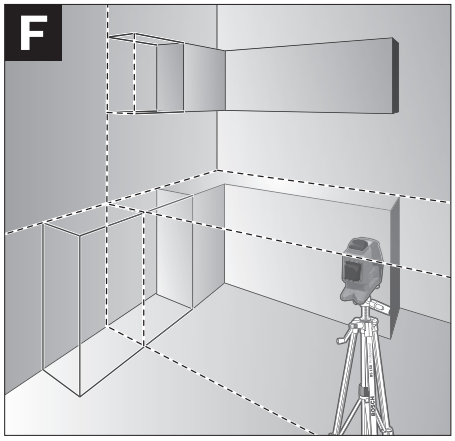




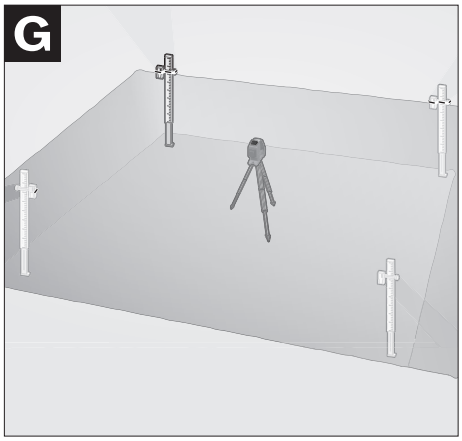


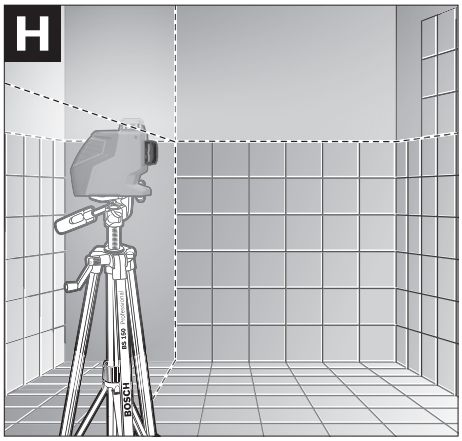


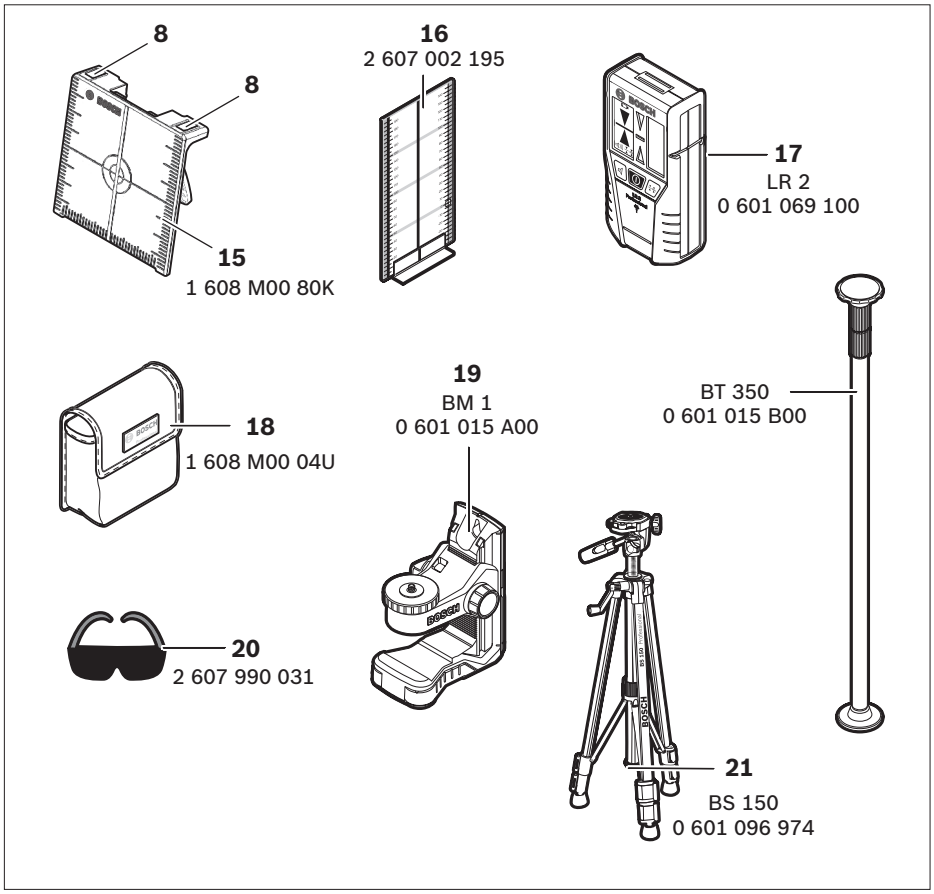




OBJ_BUCH-907-001.book Page 5 Tuesday, June 30, 2009 2:32 PM







OBJ_BUCH-907-001.book Page 15 Tuesday, June 30, 2009 2:32 PM

Safety Notes

Working safely with the measuring tool is possible only when the operating and safety information are read completely and the instructions contained therein are strictly followed. Never make warning labels on the measuring tool unrecognisable. SAVE THESE INSTRUCTIONS.

- **Caution – The use of other operating or adjusting equipment or the application of other processing methods than those mentioned here, can lead to dangerous radiation exposure.**
- **The measuring tool is provided with a warning label in English (marked with number 13 in the representation of the measuring tool on the graphics page).**

- **Do not direct the laser beam at persons or animals and do not stare into the laser beam yourself.** This measuring tool produces laser class 2 laser radiation according to IEC 60825-1. This can lead to persons being blinded.
- **Do not use the laser viewing glasses as safety goggles.** The laser viewing glasses are used for improved visualisation of the laser beam, but they do not protect against laser radiation.
- **Do not use the laser viewing glasses as sun glasses or in traffic.** The laser viewing glasses do not afford complete UV protection and reduce colour perception.
- **Have the measuring tool repaired only through qualified specialists using original spare parts.** This ensures that the safety of the measuring tool is maintained.
- **Do not allow children to use the laser measuring tool without supervision.** They could unintentionally blind other persons or themselves.
- **Do not operate the measuring tool in explosive environments, such as in the presence of flammable liquids, gases or dusts.** Sparks can be created in the measuring tool which may ignite the dust or fumes.

Keep the measuring tool and the laser target plate 15 away from cardiac pacemakers. The magnets of the measuring tool and laser target plate generate a field that can impair the function of cardiac pacemakers.

- **Keep the measuring tool and the laser target plate 15 away from magnetic data medium and magnetically-sensitive equipment.** The effect of the magnets of the measuring tool and laser target plate can lead to irreversible data loss.

Functional Description

Please unfold the fold-out page with the representation of the measuring tool and leave it unfolded while reading the operating instructions.

Intended Use

The measuring tool is intended for determining and checking horizontal and vertical lines.

Noise Information

The A-weighted sound pressure level of the audio signal at one meter distance is 80 dB(A). **Do not hold the measuring tool close to your ear!**

OBJ_BUCH-907-001.book Page 16 Tuesday, June 30, 2009 2:32 PM

Technical Data

Line laser	GLL 2-80 P Professional
Article number	3 601 K63 2..
Working range[1)] – Standard – With pulse function – With laser receiver	 20 m 15 m 5–80 m
Levelling accuracy	±0.2 mm/m
Self-levelling range, typically	±4°
Levelling duration, typically	<4 s
Operating temperature	–10 °C ... +45 °C
Storage temperature	–20 °C ... +70 °C
Relative air humidity, max.	90 %
Laser class	2
Laser type	640 nm, <1 mW
C_6	1
Shortest pulse duration	1/1600 s
Tripod mount	1/4", 5/8"
Batteries	4 x 1.5 V LR6 (AA)
Operating duration – With 2 laser planes – With 1 laser plane	 9 h 18 h
Weight according to EPTA-Procedure 01/2003	0.7 kg
Dimensions	159 x 141 x 54 mm
Degree of protection	IP 54 (dust and splash water protected)

1) The working range can be decreased by unfavourable environmental conditions (e.g. direct sun irradiation).

Please observe the article number on the type plate of your measuring tool. The trade names of the individual measuring tools may vary.

The measuring tool can be clearly identified with the serial number **14** on the type plate.

OBJ_BUCH-907-001.book Page 17 Tuesday, June 30, 2009 2:32 PM

Product Features

The numbering of the product features shown refers to the illustration of the measuring tool on the graphic page.

1 Exit opening for laser beam
2 Battery low indicator
3 Pulse-function button
4 Operating mode button
5 Pulse-function indicator
6 Working without automatic levelling indicator
7 On/Off switch
8 Magnets
9 Tripod mount 5/8"
10 Tripod mount 1/4"
11 Latch of battery lid
12 Battery lid
13 Laser warning label
14 Serial number
15 Laser target plate
16 Measurement plate with stand*
17 Laser receiver*
18 Protective pouch*
19 Universal holder*
20 Laser viewing glasses*
21 Tripod*

*** The accessories illustrated or described are not included as standard delivery.**

Assembly

Inserting/Replacing the Battery

Alkali-manganese batteries are recommended for the measuring tool.

To open the battery lid **12**, slide the latch **11** in the direction of the arrow and fold the battery lid up. Insert the batteries. When inserting, pay attention to the correct polarity according to the representation on the inside of the battery lid.

When the batteries become weak, a single 5 s audio signal will sound. The battery low indicator **2** continuously flashes red. The measuring tool can be operated for less then 2 h.

When the batteries are weak when switching on the measuring tool, the 5 s audio signal will sound directly after switching on the measuring tool.

Always replace all batteries at the same time. Only use batteries from one brand and with the identical capacity.

- **Remove the batteries from the measuring tool when not using it for extended periods.** When storing for extended periods, the batteries can corrode and discharge themselves.

Operation

Initial Operation

- **Loud audio signals will sound under certain conditions while operating the measuring tool. Therefore, keep the measuring tool away from your ear or other persons.** The loud audio signal can cause hearing damage.
- **Protect the measuring tool against moisture and direct sun light.**
- **Do not subject the measuring tool to extreme temperatures or variations in temperature.** As an example, do not leave it in vehicles for longer periods. In case of large variations in temperature, allow the measuring tool to adjust to the ambient temperature before putting it into operation. In case of extreme temperatures or variations in temperature, the accuracy of the measuring tool can be impaired.
- **Avoid heavy impact or falling of the measuring tool.** After heavy exterior impact on the measuring tool, an accuracy check should always be carried out before continuing to work (see “Levelling Accuracy”).
- **Switch the measuring tool off during transport.** When switching off, the levelling unit, which can be damaged in case of intense movement, is locked.

OBJ_BUCH-907-001.book Page 18 Tuesday, June 30, 2009 2:32 PM

Switching On and Off

To **switch on** the measuring tool, slide the On/Off switch **7** to the **“ on”** position (when working without automatic levelling) or to the **“ on”** position (when working with automatic levelling). Immediately after switching on, the measuring tool sends laser beams out of the exit openings **1**.

- ▶ **Do not point the laser beam at persons or animals and do not look into the laser beam yourself, not even from a large distance.**

To **switch off** the measuring tool, slide the On/Off switch **7** to the **“off”** position. When switching off, the levelling unit is locked.

When exceeding the maximum permitted operating temperature of 45 °C, the measuring tool switches off to protect the laser diode. After cooling down, the measuring tool is ready for operation and can be switched on again.

Deactivating the Automatic Shut-off

When no button on the measuring tool is pressed for approx. 30 minutes, the measuring tool automatically switches off to save the batteries.

To switch on the measuring tool after automatic shut-off, either slide the On/Off switch **7** to the **“off”** position and then switch the measuring tool on again or press the operating mode button **4** once or press the pulse-function button **3** once.

To deactivate the automatic shut-off, keep the operating mode button **4** pressed for at least 3 s (while the measuring tool is switched on). Deactivation of the automatic shut-off is confirmed by brief flashing of the laser beams.

- ▶ **Do not leave the switched on measuring tool unattended and switch the measuring tool off after use.** Other persons could be blinded by the laser beam.

To activate the automatic shut-off, switch the measuring tool off and then on again or press and hold the operating mode button **4** for at least 3 s.

Deactivating the Signal Tone

After the measuring tool has been switched on, the audio signal is always activated.

To deactivate/activate the audio signal, press and hold the operating mode button **4** and the pulse-function button **3** at the same time for at least 3 s.

The audio signal activation and deactivation are both confirmed by three short beeps.

Operating Modes

The measuring tool has three operating modes between which you can switch at any time:

- – Horizontal operation: generates a horizontal laser plane,
- – Vertical operation: generates a vertical laser plane,
- – Cross-line operation: generates a horizontal and vertical laser plane.

After switching on, the measuring tool is in horizontal operation. Press the operating mode button **4** to change the operating mode.

All three operating modes can be selected either with or without automatic levelling.

Pulse Function

When working with the laser receiver **17**, the pulse function must be activated, – independent of the selected operating mode.

In pulse function, the laser lines flash at very high frequency and thus become detectable by the laser receiver **17**.

To switch on the pulse function, press button **3**. When the pulse function is switched on, the pulse-function indicator **5** lights up green.

When the pulse function is switched on, the visibility of the laser lines is reduced for the human eye. Therefore, shut off the pulse function by pushing button **3** again when working without laser receiver. When the pulse function is switched off, the pulse-function indicator **5** is deactivated.

OBJ_BUCH-907-001.book Page 19 Tuesday, June 30, 2009 2:32 PM

Automatic Levelling

Working with Automatic Levelling

Position the measuring tool on a level and firm support, attach it to the holder **19** or to the tripod **21**.

When working with automatic levelling, push the On/Off switch **7** to the **"on"** position.

After switching on, the levelling function automatically compensates irregularities within the self-levelling range of ±4°. The levelling is finished as soon as the laser beams do not move any more.

If automatic levelling is not possible, e.g. because the surface on which the measuring tool stands deviates by more than 4° from the horizontal plane, the laser lines begin to flash rapidly. When the audio signal is activated, a fast-beat signal sounds for 30 s (maximum). This alarm is deactivated within 10 s after switching on, in order to allow adjustment of the measuring tool.

Set up the measuring tool in level position and wait for the self-levelling to take place. As soon as the measuring tool is within the self-levelling range of ±4°, all laser beams light up continuously and the audio signal is switched off.

In case of ground vibrations or position changes during operation, the measuring tool is automatically levelled in again. To avoid errors, check the position of the horizontal and vertical laser line with regard to the reference points upon re-levelling.

Working without Automatic Levelling

For working without automatic levelling, slide the On/Off switch **7** to the **"on"** position. When automatic levelling is switched off, indicator **6** lights up red and for the first 30 s laser beams flash slowly.

When the automatic levelling is switched off, the measuring tool can be held by hand or placed on an inclined surface. In cross-line operation, the two laser lines do not necessarily run at a right angle to each other.

Levelling Accuracy

Influences on Accuracy

The ambient temperature has the greatest influence. Especially temperature differences occurring from the ground upward can divert the laser beam.

Because the largest difference in temperature layers is close to the ground, the measuring tool should always be mounted on a tripod when measuring distances exceeding 20 m. If possible, also set up the measuring tool in the centre of the work area.

Apart from exterior influences, device-specific influences (such as heavy impact or falling down) can lead to deviations. Therefore, check the accuracy of the measuring tool each time before starting your work.

Firstly, check the levelling accuracy of the horizontal laser line and then the levelling accuracy of the vertical laser line.

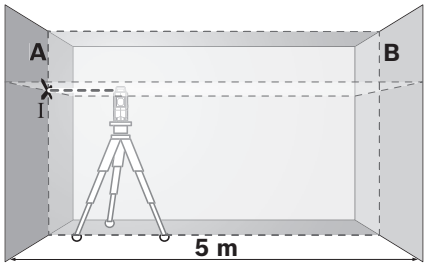
Should the measuring tool exceed the maximum deviation during one of the tests, please have it repaired by a Bosch after-sales service.

OBJ_BUCH-907-001.book Page 20 Tuesday, June 30, 2009 2:32 PM

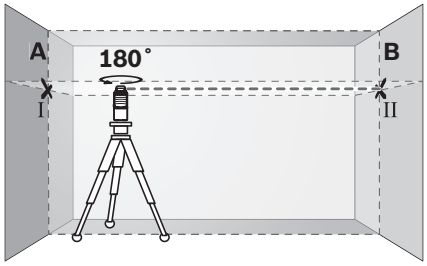
Checking the Horizontal Levelling Accuracy of the Lateral Axis

For this check, a free measuring distance of 5 metres on a firm surface between two walls A and B is required.

– Mount the measuring tool onto a tripod or place it on a firm and level survace close to wall A. Switch on the measuring tool. Select cross-line operation with automatic levelling.

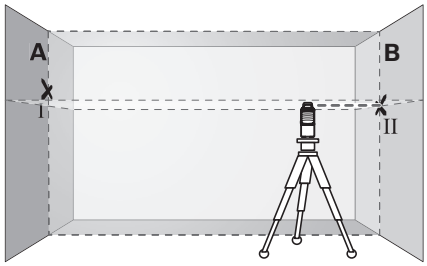


– Direct the laser against the close wall A and allow the measuring tool to level in. Mark the centre of the point where the laser lines cross each other on the wall (point I).

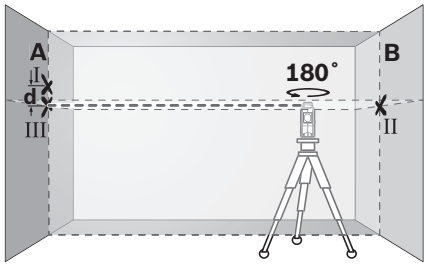


– Turn the measuring tool by 180°, allow it to level in and mark the cross point of the laser lines on the opposite wall B (point II).

– Without turning the measuring tool, position it close to wall B. Switch the measuring tool on and allow it to level in.



– Align the height of the measuring tool (using a tripod or by underlaying, if required) in such a manner that the cross point of the laser lines is projected against the previously marked point II on the wall B.



– Without changing the height, turn around the measuring tool by 180°. Direct it against the wall A in such a manner that the vertical laser line runs through the already marked point I. Allow the measuring tool to level in and mark the cross point of the laser lines on the wall A (point III).

– The difference **d** of both marked points I and III on wall A results in the actual height deviation of the measuring tool alongside the lateral axis.

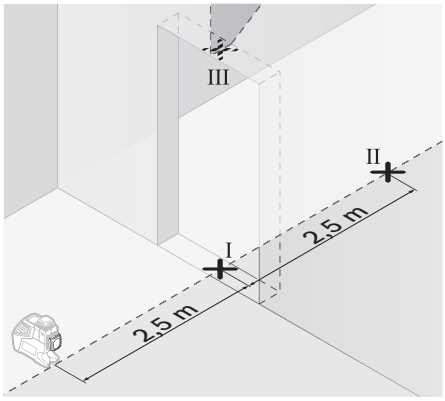
On the measuring distance of 2 x 5 m = 10 m, the maximum allowable deviation is:
10 m x ±0.2 mm/m = ±2 mm.
Thus, the difference **d** between points I and III must not exceed 2 mm (max.).

OBJ_BUCH-907-001.book Page 21 Tuesday, June 30, 2009 2:32 PM

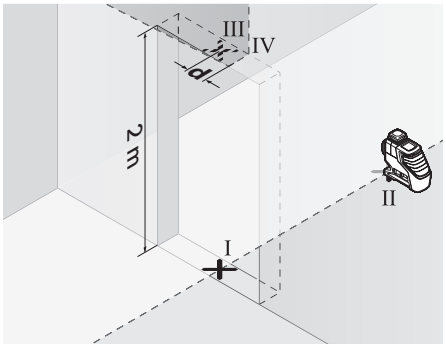
Checking the Levelling Accuracy of the Vertical Line

For this check, a door opening is required with at least 2.5 metres of space (on a firm surface) to each side of the door.

– Position the measuring tool on a firm, level surface (not on a tripod) 2.5 m away from the door opening. Allow the measuring tool to level in while in vertical operation with automatic levelling, and direct the laser beam at the door opening.



– Mark the centre of the vertical laser line at the floor of the door opening (point I), at a distance of 5 metres beyond the other side of the door opening (point II) and at the upper edge of the door opening (point III).



– Rotate the measuring tool by 180° and position it on the other side of the door opening directly behind point II. Allow the measuring tool to level in and align the vertical laser line in such a manner that its centre runs exactly through points I and II.
– Mark the centre of the laser line at the upper edge of the door opening as point IV.
– The difference **d** of both marked points III and IV results in the actual deviation of the measuring tool to the plumb line.
– Measure the height of the door opening.

The maximum admissible deviation is calculated as follows:
Doubled height of the door opening x 0.2 mm/m
Example: For a door-opening height of 2 m, the maximum deviation may be
2 x 2 m x ±0.2 mm/m = ±0.8 mm. Consequently, points III and IV may be no more than 0.8 mm (max.) apart from each other.

Working Advice

▶ **Always use the centre of the laser line for marking.** The width of the laser line changes with the distance.

Working with the laser target plate

The laser target plate **15** increases the visibility of the laser beam under unfavourable conditions and at large distances.

The reflective part of the laser target plate **15** improves the visibility of the laser line. Thanks to the transparent part, the laser line is also visible from the back side of the laser target plate.

Working with the Tripod (Accessory)

A tripod offers a stable, height-adjustable measuring support. Position the measuring tool with the 1/4" tripod mount **10** onto the thread of the tripod **21** or a commercially available camera tripod. For fastening to a commercially available construction tripod, use the 5/8" tripod mount **9**. Tighten the measuring tool with the tripod mounting stud.

Fastening with the Universal Holder (Accessory) (see figure D)

With the universal holder **19**, you can fasten the measuring tool, e.g., to vertical surfaces, pipes or magnetizable materials. The universal holder is also suitable for use as a ground tripod and makes the height adjustment of the measuring tool easier.

OBJ_BUCH-907-001.book Page 22 Tuesday, June 30, 2009 2:32 PM

Working with the Measuring Plate (Accessory) (see figures A–B)

With the measuring plate **16**, it is possible to project the laser mark onto the floor or the laser height onto a wall.

With the zero field and the scale, the offset or drop to the required height can be measured and projected at another location. This eliminates the necessity of precisely adjusting the measuring tool to the height to be projected.

The measuring plate **16** has a reflective coating that enhances the visibility of the laser beam at greater distances or in intense sunlight. The brightness intensification can be seen only when viewing, parallel to the laser beam, onto the measuring plate.

Working with the Laser Receiver (Accessory) (see figure D)

Under unfavourable light conditions (bright environment, direct sunlight) and for larger distances, use the laser receiver for improved finding of the laser lines **17**. When working with the laser receiver, switch the pulse function on (see “Pulse Function”, page 18).

Laser Viewing Glasses (Accessory)

The laser viewing glasses filter out the ambient light. This makes the red light of the laser appear brighter for the eyes.

- **Do not use the laser viewing glasses as safety goggles.** The laser viewing glasses are used for improved visualisation of the laser beam, but they do not protect against laser radiation.
- **Do not use the laser viewing glasses as sun glasses or in traffic.** The laser viewing glasses do not afford complete UV protection and reduce colour perception.

Work Examples (see figures C–H)

Applicational examples for the measuring tool can be found on the graphics pages.

Maintenance and Service

Maintenance and Cleaning

Store and transport the measuring tool only in the supplied protective pouch.

Keep the measuring tool clean at all times.

Do not immerse the measuring tool in water or other fluids.

Wipe off debris using a moist and soft cloth. Do not use any cleaning agents or solvents.

Regularly clean the surfaces at the exit opening of the laser in particular, and pay attention to any fluff of fibres.

If the measuring tool should fail despite the care taken in manufacturing and testing procedures, repair should be carried out by an authorised after-sales service centre for Bosch power tools. Do not open the measuring tool yourself.

In all correspondence and spare parts orders, please always include the 10-digit article number given on the type plate of the measuring tool.

In case of repairs, send in the measuring tool packed in its protective pouch **18**.

After-sales Service and Customer Assistance

Our after-sales service responds to your questions concerning maintenance and repair of your product as well as spare parts. Exploded views and information on spare parts can also be found under:
www.bosch-pt.com
Our customer service representatives can answer your questions concerning possible applications and adjustment of products and accessories.

OBJ_BUCH-907-001.book Page 23 Tuesday, June 30, 2009 2:32 PM

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143 Crompton Street
Pinetown
Tel.: +27 (031) 7 01 21 20
Fax: +27 (031) 7 01 24 46
E-Mail: bsc.dur@za.bosch.com

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E-Mail: rbsa-hq.pts@za.bosch.com

People's Republic of China

Website: www.bosch-pt.com.cn

China Mainland
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567, Bin Kang Road
Bin Jiang District 310052
Hangzhou, P.R.China
Service Hotline: 800 8 20 84 84
Tel.: +86 (571) 87 77 43 38
Fax: +86 (571) 87 77 45 02

HK and Macau Special Administrative Regions
Robert Bosch Hong Kong Co. Ltd.
21st Floor, 625 King's Road
North Point, Hong Kong
Customer Service Hotline: +852 (21) 02 02 35
Fax: +852 (25) 90 97 62
E-Mail: info@hk.bosch.com
www.bosch-pt.com.cn

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PT. Multi Tehaka
Kawasan Industri Pulogadung
Jalan Rawa Gelam III No. 2
Jakarta 13930
Indonesia
Tel.: +62 (21) 4 60 12 28
Fax: +62 (21) 46 82 68 23
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OBJ_BUCH-907-001.book Page 24 Tuesday, June 30, 2009 2:32 PM

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Fax: +84 (8) 9111376

Disposal

Measuring tools, accessories and packaging should be sorted for environmental-friendly recycling.

Only for EC countries:

Do not dispose of measuring tools into household waste!
According the European Guideline 2002/96/EC for Waste Electrical and Electronic Equipment and its implementation into national right, measuring tools that are no longer usable must be collected separately and disposed of in an environmentally correct manner.

Battery packs/batteries:
Do not dispose of battery packs/batteries into household waste, fire or water. Battery packs/batteries should be collected, recycled or disposed of in an environmental-friendly manner.

Only for EC countries:
Defective or dead out battery packs/batteries must be recycled according the guideline 91/157/EEC.

Battery packs/batteries no longer suitable for use can be directly returned at:

Great Britain
Robert Bosch Ltd. (B.S.C.)
P.O. Box 98
Broadwater Park
North Orbital Road
Denham
Uxbridge
UB 9 5HJ
Tel. Service: +44 (0844) 736 0109
Fax: +44 (0844) 736 0146
E-Mail: SPT-Technical.de@de.bosch.com

Subject to change without notice.